Listing of Claims

No amendments have been made to the presently pending claims. This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Previously Presented) A method for encoding fractional bit rates in a communication system, comprising:

receiving information associated with a destination transceiver, the information relating to a plurality of signal space constellation points supported by the destination transceiver;

based on the information associated with the destination transceiver, encoding an integer number of bits into a plurality of symbols, the ratio of the integer number of bits and the plurality of symbols being a non-integer; and

based on the information associated with the destination transceiver, encoding each of the plurality of symbols into one of a plurality of analog symbols corresponding to the signal space constellation points, wherein the information associated with the destination transceiver comprises a first look-up table and the encoding an integer number of bits into a plurality of symbols involves the first look-up table.

2. (Canceled)

3. (Previously Presented) The method of claim 1, wherein the encoding an integer number of bits into a plurality of symbols involves modulus conversion.

4. (Previously Presented) The method of claim 1, wherein the encoding an integer number of bits into a plurality of symbols involves shell mapping.

5. (Previously Presented) The method of claim 1, wherein the encoding an integer number of bits into a plurality of symbols involves constellation switching.

6. (Canceled)

7. (Previously Presented) The method of claim 1, wherein the information associated with the destination transceiver further comprises a second look-up table and the encoding each of the plurality of symbols into one of a plurality of analog symbols involves the second look-up table.

8. (Previously Presented) The method of claim 1, wherein the information associated with the destination transceiver further comprises an encoding algorithm and the encoding an integer number of bits into a plurality of symbols is performed using the encoding algorithm.

9. (Previously Presented) The method of claim 1, wherein the encoding each of the plurality of symbols into one of a plurality of analog symbols corresponding to the signal space constellation points is further based on the output of a forward error correction code device.

10. (Previously Presented) The method of claim 1, further comprising applying each of the plurality of analog symbols to a gain scalar.

11. (Previously Presented) The method of claim 1, further comprising providing the plurality of analog symbols corresponding to the signal space constellation points to the destination transceiver.

12. (Previously Presented) The method of claim 11, wherein the providing the plurality of analog symbols corresponding to the signal space constellation points to the destination transceiver is via a digital subscriber line (DSL).

13. (Canceled)

14. (Previously Presented) A transceiver, comprising:

means for receiving information associated with a destination transceiver, the information relating to a plurality of signal space constellation points supported by the destination transceiver;

means for encoding, based on the information associated with the destination transceiver, an integer number of bits into a plurality of symbols, the ratio of the integer number of bits and the plurality of symbols being a non-integer; and

means for encoding, based on the information associated with the destination transceiver, each of the plurality of symbols into one of a plurality of analog symbols corresponding to the signal space constellation points, wherein the information associated with the destination transceiver comprises a first look-up table and the encoding an integer number of bits into a plurality of symbols involves the first look-up table.

15. (Canceled)

16. (Previously Presented) The transceiver of claim 14, wherein the means for encoding an integer number of bits into a plurality of symbols involves a modulus conversion means.

17. (Previously Presented) The transceiver of claim 14, wherein the means for encoding an integer number of bits into a plurality of symbols involves a shell mapping means.

18. (Previously Presented) The transceiver of claim 14, wherein the means for encoding an integer number of bits into a plurality of symbols involves a constellation switching means.

19. (Canceled)

20. (Previously Presented) The transceiver of claim 14, wherein the information associated with the destination transceiver further comprises a second look-up table and the encoding each of the plurality of symbols into one of a plurality of analog symbols involves the second look-up table.

21. (Previously Presented) The transceiver of claim 14, wherein the information associated with the destination transceiver further comprises an encoding algorithm and the encoding an integer number of bits into a plurality of symbols is performed using the encoding algorithm.

22. (Previously Presented) The transceiver of claim 14, wherein the encoding each of the plurality of symbols into one of a plurality of analog symbols corresponding to the signal space constellation points is further based on the output of a forward error correction encoding means.

23. (Previously Presented) The transceiver of claim 14, further comprising ~~a~~ means for gain scaling each of the plurality of analog symbols.

24. (Previously Presented) The transceiver of claim 14, further comprising ~~a~~ means for providing the plurality of analog symbols to the destination transceiver.

25. (Original) The transceiver of claim 24, wherein the plurality of analog symbols are provided to the destination transceiver via a digital subscriber line (DSL).

26. (Previously Presented) A transceiver for use in a communication system, comprising:

a receiver adapted to receive information associated with a destination transceiver, the information relating to a plurality of signal space constellation points supported by the destination receiver;

a fractional encoder associated with the receiver, the fractional encoder adapted to encode an integer number of bits into a plurality of symbols based on the information associated with the destination transceiver, the ratio of the integer number of bits and the plurality of symbols being a non-integer;

a constellation encoder associated with the fractional encoder, the constellation encoder adapted to encode, based on the information associated with the destination transceiver, each of the plurality of symbols into one of a plurality of analog symbols corresponding to the signal space constellation points; and

a transmitter associated with the constellation encoder, the transmitter adapted to provide the plurality of analog symbols to the destination transceiver;

wherein the information associated with the destination transceiver comprises a first look-up table and the fractional encoder is adapted to encode the integer number of bits into the plurality of symbols based on the first look-up table.

27. (Original) The transceiver of claim 26, wherein the fractional encoder encodes the integer number of bits into the plurality of symbols via modulus conversion.

28. (Original) The transceiver of claim 26, wherein the fractional encoder encodes the integer number of bits into the plurality of symbols via shell mapping.

29. (Original) The transceiver of claim 26, wherein the fractional encoder encodes the integer number of bits into the plurality of symbols via constellation switching.

30. (Canceled)

31. (Previously Presented) The transceiver of claim 26, wherein the information associated with the destination transceiver further comprises a second look-up table and the constellation encoder is adapted to encode each of the plurality of symbols into one of the plurality of analog symbols based on the second look-up table.

32. (Original) The transceiver of claim 26, wherein the information associated with the destination transceiver comprises an encoding algorithm and the fractional encoder is further adapted to implement the encoding algorithm to encode the integer number of bits into the plurality of symbols

33. (Previously Presented) The transceiver of claim 26, wherein the constellation encoder is further adapted to encode each of the plurality of symbols into one of the

plurality of analog symbols corresponding to the signal space constellation points based on the output of a forward error correction code encoder.

34. (Original) The transceiver of claim 26, further comprising a gain scalar.

35. (Original) The transceiver of claim 26, wherein the plurality of analog symbols are provided to a digital subscriber line (DSL).

36. (Previously Presented) A method for controlling the symbol transmission rate in a communication system, comprising:

providing information to a source transceiver, the information capable of being used to determine a fractional bit rate;

receiving a plurality of analog symbols from the source transceiver, each of the plurality of analog symbols corresponding to a signal space constellation; and

decoding the plurality of analog symbols into an integer number of bits comprising a plurality of symbols, the ratio of the integer number of bits and the plurality of symbols being a non-integer corresponding to the fractional bit rate;

wherein the information comprises a first look-up table adapted to enable the source transceiver to encode an integer number of bits into a plurality of symbols, wherein the ratio of the integer number of bits and the plurality of symbols conforms to the fractional value of the fractional bit rate.

37. (Original) The method of claim 36, wherein the decoding the plurality of analog symbols involves modulus conversion.

38. (Original) The method of claim 36, wherein the decoding the plurality of analog symbols involves shell mapping.

39. (Original) The method of claim 36, wherein the decoding the plurality of analog symbols involves constellation switching.

40. (Previously Presented) The method of claim 36, wherein the information comprises a number of signal space constellation points.

41. (Canceled)

42. (Previously Presented) The method of claim 36, wherein the information further comprises a second look-up table adapted to enable the source transceiver to encode each of the plurality of symbols into one of the plurality of analog symbols.

43. (Original) The method of claim 36, wherein the information further comprises an encoding algorithm adapted to enable the source transceiver to execute the encoding algorithm and encode at the fractional bit rate.

44. (Original) The method of claim 43, wherein the encoding algorithm involves modulus conversion.

45. (Original) The method of claim 43, wherein the encoding algorithm involves shell mapping.

46. (Original) The method of claim 43, wherein the encoding algorithm involves constellation switching.

47. (Previously Presented) A method for controlling the symbol rate supplied to a destination transceiver over a communication channel in a communication system, comprising:

determining a maximum number of signal space constellation points capable of being supported by the destination transceiver and the communication channel;

providing information associated with the maximum number of signal space constellation points to a source transceiver;

receiving a plurality of analog symbols on the communication channel, each of the plurality of analog symbols corresponding to the signal space constellation points and one of the maximum number of signal space constellation points; and

decoding the plurality of analog symbols into an integer number of bits comprising a plurality of symbols, the ratio of the integer number of bits and the plurality of symbols being a non-integer corresponding to a fractional bit rate associated with the maximum number of signal space constellation points.

48. (Previously Presented) A transceiver for use in a communication system, comprising:

means for providing information to a source transceiver, the information capable of being used to determine a fractional bit rate;

means for receiving a plurality of analog symbols from the source transceiver, each of the plurality of analog symbols corresponding to a signal space constellation; and

means for decoding the plurality of analog symbols into an integer number of bits comprising a plurality of symbols, the ratio of the integer number of bits and the plurality of symbols being a non-integer corresponding to the fractional bit rate;

wherein the information comprises a first look-up table adapted to enable the source transceiver to encode an integer number of bits into a plurality of symbols, and wherein the ratio of the integer number of bits and the plurality of symbols conforms to the fractional value of the fractional bit rate.

49. (Original) The transceiver of claim 48, wherein the means for decoding the plurality of analog symbols involves a modulus conversion means.

50. (Original) The transceiver of claim 48, wherein the means for decoding the plurality of analog symbols involves a shell mapping means.

51. (Original) The transceiver of claim 48, wherein the means for decoding the plurality of analog symbols involves a constellation switching means.

52. (Previously Presented) The transceiver of claim 48, wherein the information comprises a number of signal space constellation points.

53. (Canceled)

54. (Previously Presented) The transceiver of claim 48, wherein the information further comprises a second look-up table adapted to enable the source transceiver to encode each of the plurality of symbols into one of the plurality of analog symbols.

55. (Original) The transceiver of claim 48, wherein the information further comprises an encoding algorithm adapted to enable the source transceiver to execute the encoding algorithm and encode at the fractional bit rate.

56. (Original) The transceiver of claim 55, wherein the encoding algorithm involves modulus conversion.

57. (Original) The transceiver of claim 55, wherein the encoding algorithm involves shell mapping.

58. (Original) The transceiver of claim 55, wherein the encoding algorithm involves constellation switching.

59. (Previously Presented) A transceiver for use in a communication system, comprising:

means for determining a maximum number of signal space constellation points capable of being supported by the destination transceiver and the communication channel;

means for providing information associated with the maximum number of signal space constellation points to a source transceiver;

means for receiving a plurality of analog symbols on the communication channel, each of the plurality of analog symbols corresponding to the signal space constellation points and one of the maximum number of signal space constellation points; and

means for decoding the plurality of analog symbols into an integer number of bits comprising a plurality of symbols, the ratio of the integer number of bits and the plurality of symbols being a non-integer corresponding to a fractional bit rate associated with the maximum number of signal space constellation points.

60. (Previously Presented) A transceiver for use in a communication system, comprising:

a transmitter adapted to provide information to a source transceiver, the information capable of being used to determine a fractional bit rate;

a receiver adapted to receive a plurality of analog symbols from the source transceiver, each of the plurality of analog symbols corresponding to a signal space constellation; and

a fractional decoder adapted to decode the plurality of analog symbols into an integer number of bits comprising a plurality of symbols, the ratio of the integer number

of bits and the plurality of symbols being a non-integer corresponding to the fractional bit rate;

wherein the information comprises a first look-up table adapted to enable the source transceiver to encode an integer number of bits into a plurality of symbols, and wherein the ratio of the integer number of bits and the plurality of symbols conforms to the fractional value of the fractional bit rate.

61. (Original) The transceiver of claim 60, wherein the fractional decoder is a modulus converter.

62. (Original) The transceiver of claim 60, wherein the fractional decoder is a shell mapper.

63. (Original) The transceiver of claim 60, wherein the fractional decoder employs constellation switching.

64. (Previously Presented) The transceiver of claim 60, wherein the information comprises a number of signal space constellation points.

65. (Canceled)

66. (Previously Presented) The transceiver of claim 60, wherein the information further comprises a second look-up table adapted to enable the source transceiver to encode each of the plurality of symbols into one of the plurality of analog symbols.

67. (Original) The transceiver of claim 60, wherein the information further comprises an encoding algorithm adapted to enable the source transceiver to execute the encoding algorithm and encode at the fractional bit rate.

68. (Original) The transceiver of claim 67, wherein the encoding algorithm involves modulus conversion.

69. (Original) The transceiver of claim 67, wherein the encoding algorithm involves shell mapping.

70. (Original) The transceiver of claim 67, wherein the encoding algorithm involves constellation switching.

71. (Previously Presented) The method of claim 1, wherein the communication system is a pulse amplitude modulation (PAM) system, and the signal space constellation points correspond to PAM levels.

72. (Previously Presented) The method of claim 1, wherein the number of signal space constellation points is not equal to a power of 2.

73. (Previously Presented) The transceiver of claim 14, wherein the signal space constellation points correspond to pulse amplitude modulation (PAM) levels.

74. (Previously Presented) The transceiver of claim 14, wherein the number of signal space constellation points is not equal to a power of 2.

75. (Previously Presented) The transceiver of claim 26, wherein:

the transceiver is for use in a pulse amplitude mode (PAM) communication system;

the signal space constellation points correspond to PAM levels; and

the constellation encoder is a PAM mapper.

76. (Previously Presented) The transceiver of claim 26, wherein the number of signal space constellation points is not equal to a power of 2.

77. (Previously Presented) The method of claim 36, wherein, the communication system is a pulse amplified modulation (PAM) system, and the signal space constellation is a PAM signal space constellation.

78. (Previously Presented) The method of claim 47, wherein the communication system is a pulse amplitude modulation (PAM) system, and the signal space constellation points correspond to PAM levels.

79. (Previously Presented) The method of claim 47, wherein the number of signal space constellation points is not equal to a power of 2.

80. (Previously Presented) The transceiver of claim 59, wherein the communication system is a pulse amplitude modulation (PAM) communication system, and the signal space constellation points correspond to PAM levels.

81. (Previously Presented) The transceiver of claim 59, wherein the number of signal space constellation points is not equal to a power of 2.

82. (Previously Presented) The transceiver of claim 60, wherein the communication system is a pulse amplitude modulation (PAM) communication system and the signal space constellation is a PAM signal space constellation.

83. (Previously Presented) The method of claim 47, wherein the decoding the plurality of analog symbols involves modulus conversion.

84. (Previously Presented) The method of claim 47, wherein the decoding the plurality of analog symbols involves shell mapping.

85. (Previously Presented) The method of claim 47, wherein the decoding the plurality of analog symbols involves constellation switching.

86. (Previously Presented) The method of claim 47, further comprising applying each of the plurality of analog symbols to a gain scalar.

87. (Previously Presented) The transceiver of claim 48, wherein the communication system is a pulse amplitude modulation (PAM) communication system and the signal space constellation is a PAM signal space constellation.

88. (Previously Presented) The method of claim 59, wherein the means for decoding the plurality of analog symbols involves a modulus conversion means.

89. (Previously Presented) The method of claim 59, wherein the means for decoding the plurality of analog symbols involves a shell mapping means.

90. (Previously Presented) The method of claim 59, wherein the means for decoding the plurality of analog symbols involves constellation switching means.

91. (Previously Presented) The method of claim 59, further comprising means for gain scaling each of the plurality of analog symbols.